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CLEANING HOUSE:
CONSIDERATIONS OF ECOLOGICAL HEALTH AND SUSTAINABILITY
IN THE SELECTION OF HOUSEHOLD CLEANING PRODUCTS

a thesis

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Abstract

Cleaning House: Considerations of Ecological Health and Sustainability in the Selection of Household Cleaning Products

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In an era of increasing awareness about the impacts of everyday consumption on ecological sustainability, this study investigates the factors that influence mothers' selection of household cleaning products. The data for this study are from 28 in-depth interviews with mothers who maintain diverse preferences across a cleaning product profile spectrum. Incorporating the concepts of risk, trust, and convenience, the analysis highlights the ways in which considerations of ecological health in relation to cleaning products influence purchasing decisions of some participants but not others. This study contributes to understandings of how consumer practices shift toward environmental sustainability.

Introduction:

Consumption decisions in the context of the seemingly mundane experiences of everyday life have broad implications for environmental sustainability (Dauvergne, 2009; Shove, 2003). As consumer awareness of the impacts of consumption decisions on the health of the environment has increased, many consumers, engaging in so-called, green, ethical, sustainable, or conscious consumption practices, have made shifts in their lifestyle habits in order to reduce resource use and pollution (e.g. Connolly & Prothero, 2008; Thompson & Coskuner-Balli, 2007). Within the past decade, several researchers have examined how consumers have shifted to more sustainable practices in terms of food consumption (e.g. Selfa, Jussaume, and Winter, 2008; Thompson & Coskuner-Balli, 2007) and journalists have made strong cases that potential changes in food consumption could have major impacts on both human and environmental health (Pollan, 2006; Schlosser, 2001).

In contrast to food, household cleaning, an activity that most people engage in on a regular basis, has not been thoroughly examined in terms of shifting patterns of consumption related to environmental sustainability. Shove (2003) detailed how activities related to the maintenance of standards of cleanliness have broad impacts on the environment due to extensive energy and other resource use. She focused on developing an analysis of cleanliness norms in the United States and Britain, but did not explore how, and under what circumstances, such norms shift toward environmental sustainability.

Guided by a focus on environmental and health considerations, this interview-based study examines how the paradigms underlying conceptions of cleanliness and assessment of associated risks influence household cleaning behaviors and selection of household cleaning products. The following question guides the research:

- In an era of increasing availability of information about threats to human and environmental health that arise out of everyday consumption, how do considerations of trust, risk, convenience, and adherence to norms influence mothers' selection of household cleaning products and practices?

Issues of convenience (Shove, 2003), trust (Giddens, 1991), and risk (Beck, 1992) are explored as they relate to contexts for changes in household cleaning practices and products.

Literature Review:

In the process of maintaining clean and orderly homes, Americans spend billions on household cleaning products, many of which contain synthetic chemicals, some of which leave toxic residues on people and household surfaces and contribute to environmental pollution (e.g. Environmental Working Group (EWG) Skin Deep Database, 2009a; Wakefield & Ferre, 2000). Many of the chemical compounds have not been adequately tested for safety in real world applications, while some are known pollutants, irritants, and carcinogens (EWG Skin Deep Database, 2009; Sarantis, Malkan, & Archer, 2009; Perry, 2009) which contribute to poor indoor air quality (United States Environmental Protection Agency and Department of Health and Human Services, 1991). Many of the chemicals have found their way into the bodies of Americans over the age of

six (Centers for Disease Control and Prevention (CDC), 2005) as well as babies (e.g. EWG, 2009b).

A particularly troubling group of chemicals that are found in personal and home hygiene products are those which fall under the category of endocrine disruptors. The endocrine disruptor hypothesis, which first started to take shape publically within the scientific community in 1991 (Colburn, Dumanoski, & Myers, 1999; Krimsky, 2000), has revolutionized the way that scientists think about chemical interactions and outcomes in humans and wildlife. The environmental endocrine disruptor hypothesis is based on research that shows that synthetic chemicals mimic natural estrogen and can activate or block estrogen receptors in cells (e.g. McLachlan & Arnold, 1996). Given the broad ranging functions of the endocrine system, which regulates many systems in humans (and other animals) including the immune system, reproduction, and neurological functions, there is great potential for endocrine disruptors to cause significant harm, in particular when hormone disrupting chemicals act together (Colburn, Dumanoski, & Myers, 1996). Endocrine disruptors are invisible to the naked eye, are not distinguished by any particular scent, and are not listed as ingredients in cleaning products (Szabo, 2007). When cleaning products contain endocrine disruptors, people are exposed to hormone disruptors both through direct use of products and through runoff from cleaning products into the environment.

Despite evidence of potential harm in products designed for personal and home hygiene, many people are not aware of the extent to which some of the chemicals in the products they use to clean themselves or their homes may actually be more dangerous

than the dirt they wash away. For example, in a recent study, women who were aware of the presence and level of industrial chemicals in their bloodstream linked that impact to historical exposures and major environmental disasters in their areas, not with everyday household exposures (Altman, Morello-Frosch, Brody, Rudel, Brown, & Averick, 2008). One reason that many threats may not be part of consumer consciousness is because the hazards remain hidden in contested discourse characteristic of a risk society that complicates conceptions of the level and severity of any potential threats (Beck, 1992). As described by Beck, claims based on science, such as those regarding chemicals in cleaning products, are subject to revision and “implied causality always remains more or less uncertain and tentative” (Beck, 1992, p28). In other words, claims are characterized by reflexive doubt (Giddens, 1991). Since scientific explanations often causally link disparate elements and are subject to refutation through either real-world examples or subsequent research, they may only become normalized over time through social and political channels (Beck, 1992). Sorting through risk claims can be especially challenging when there are competing risks.

Recommendations for household cleaning products and practices that arise out of science-based health concerns can be challenging for consumers to navigate. For example, households with asthma sufferers must balance removing potential asthma triggers such as mold and pollen with the potential risk that the cleaning products themselves will also trigger asthma (United States Environmental Protection Agency, 2004). More broadly, over the past two decades, there has been contestation regarding health claims about the degree to which homes should be free of germs (Ashenburg,

2007). Early in the 1990's, news articles provided consumers with details of germ threats in their homes as well as methods for eliminating such threats through cleaning and disinfecting (e.g. Roach, 1994). By 2000, popular outlets such as Consumer Reports were calling for consumers to limit their use of antibacterial cleaning products in the home in order to minimize the development of antibiotic resistant bacteria (Consumer Reports, 2000). With the onset of the 2009 H1N1 flu epidemic, the United States Centers for Disease Control (CDC) recommended wiping down household surfaces with a disinfectant in order to prevent the spread of the disease (CDC, 2009).

Conceptions of acceptable home hygiene, or cleanliness, have evolved over time and are tied to socio-cultural factors which influence behavior. As described by Ashenburg (2007), socially acceptable standards of hygiene have shifted over time. Throughout western history, human health concerns have contributed to the adoption of hygiene practices and as the scientific germ theory of disease transmission took hold in the early 20th century, cleaning with soap and water became an important ritual in order to reduce infection (Ashenburg, 2007). In addition to health concerns, social customs and norms as well as economic conditions have also influenced underlying paradigms and dominant practices around cleanliness. The advent of relative widespread economic prosperity and an age of advertising have influenced attitudes and practices regarding cleanliness in the contemporary United States. Silvulka (2001) argues that the rise in consumer culture increased standards of cleanliness for both American citizens and immigrants, in part by connecting standards of cleanliness with social and economic benefits to both the individual and society.

As discussed by Shove (2003), cleanliness norms, which include moral dimensions, are actualized in complex processes of coordination and consumption. Convenience is an important attribute of the process because individuals work to maintain standards of clean among multiple other priorities (Shove, 2003). Ideological paradigms influence and reinforce behaviors, attitudes, and power relations within a society yet are masked by normal common sense (Gramsci, 1971). Prevailing ideologies can also be described in terms of hegemony, which is a measure of power and dominance within a society (Gramsci, 1971).

Over the past few years, a parallel to the hegemonic paradigm of cleanliness has emerged in the United States: that of using less toxic or more “environmentally friendly” products and resisting some of the dominant social norms regarding a germ-free home. In terms of the debate over products used in household cleaning, there is a new emergent counter-hegemony that is in part based on science but also increases the space for “partial perspectives” and “subjugated” knowledge (Haraway, 1991, p191). The counter-hegemony, to varying degrees, questions common-sense notions of what it means to be clean and the methods that one should engage in order to be clean. The side that is most entrenched in science has recommended substituting less toxic cleaning products in currently established cleaning rituals. For example, health officials and environmental health advocates have sought to raise awareness about the potential negative impacts of chemical-laden cleaning products on children (e.g. Brazelton & Greenspan, 2007; Center for Health, Environment and Justice, 2009) and many parents have made shifts in their

cleaning products and practices as a result of exposure to information regarding potential health impacts of toxins in cleaning products (e.g. Fischler, 2007).

On the more radical side of the counter-hegemony of clean are threads of more broadly situated knowledge as people question the impact that rituals of cleaning may have on the health and well-being of people and the environment. The internet has provided a widely-accessible technological forum to support discourse which is reinforcing and expanding these threads in ways that support a “sustained, rational, objective enquiry” (Haraway, 1991, p191). Online websites such as Care2.com, provide a forum for people to share their recommendations regarding cleaning practices, habits, and expectations. The discourse includes recipes for making less “toxic”, homemade cleaning and personal care products as well as challenging dominant assumptions of what it means to be clean. For example, some ideologies that have been questioned include the necessity of “disinfecting” one’s home, showering every day, or using antiperspirants.

With competing claims about risks, entrenched norms, and new paradigms for norms, who do consumers trust to help them make sense of the information and make their choices of cleaning products and practices in an age of increasing environmental awareness? As Giddens (1991) argues, in this era of high modernity, people reflexively construct their lifestyles on a day to day basis though the choices that they make based on mediated knowledge. Who do parents trust to help them make the decision to stay with the products that they had been using to clean their homes or to switch to more environmentally friendly products? What influences those decisions and are the decisions

influenced more by assessments of risk, applications of trust, adherence to norms, or notions of convenience?

Research Methods:

To collect data for this study, the researcher conducted in-depth, semi-structured interviews with 28 Boston–area mothers between the ages of 25 and 50 regarding their home cleaning products and practices. Study participants make up a stratified purposive sample derived through convenience and snowball approaches. The sample is stratified based on current preferences for cleaning products, and includes 12 participants who have embraced cleaning products and practices that are “environmentally friendly” or sustainable, 11 who have not, and 5 who take a mixed approach to their cleaning products. For the purposes of this study, adoption of environmentally friendly or sustainable practices is based on the types of products that the participants primarily use to clean their homes. Examples of eco-friendly products are those that are biodegradable, derived from plants, and do not contain petroleum-derived ingredients, synthetic fragrances, bleach, ammonia, or other highly contested cleaning agents (Wakefield & Ferre, 2000). In addition, homemade cleaning products made with ingredients such as baking soda and vinegar are also included in the definition of eco-friendly products.

Participants were recruited through flyers, emails, phone calls, face-to-face interactions and online posts. Consistent with snowball sampling techniques, participants were recruited through the researcher’s and participants’ respective social networks. The semi-structured in-person interviews took place at mutually agreed upon meeting spaces

throughout Boston and its surrounding suburbs including participant homes, workplaces, and restaurants; lasted 45 to 90 minutes each, and were taped using a digital voice recorder. Topics covered during the interview included: practices related to house cleaning and home maintenance, products used in home cleaning and home maintenance, changes in individual's cleaning practices over time, and external influences on definitions of a clean home. Each participant was also asked to assess the impact of her cleaning practices and products on her family's health and the larger environment. In addition, participants were asked to identify environmentally-focused household practices in which they and household members engage.

After each interview, the researcher transcribed the digital recording. More than 300 pages of interview transcripts were generated. Interviews were conducted, coded, and analyzed according to the Extended Case Method framework as described by Michael Burawoy (2009), whereby existing theory guides the "aggregation" of single cases "into social processes" (p41). As the sole researcher on this project, the author worked to analyze the data in a careful and consistent process in order to maintain validity in the development of codes and reliability in coding across interviews, thereby creating "a tight fit between [participants'] understanding, ideas, and statements about the social world and what is actually occurring in it" (Neuman, 2006, p196).

Description of sample:

Representing unique households, the 28 culturally diverse participants included in this analysis are all married mothers, with 1-4 children residing in the city of Boston or

its surrounding suburbs. Twenty-five of the 28 mothers are homeowners. All of the participants have a post-secondary educational credential, 19 of which are graduate-level degrees. The majority of the participants work outside the home: 12 work full-time and 7 work part-time for at least two days per week. Seven participants are stay-at-home mothers, six of whom also work very part-time jobs from the home, and two participants were unemployed and seeking jobs outside the home. Table 1 lists a summary of select participant characteristics. As reported by participants, the distribution of household cleaning responsibilities within each household ranges from participants who do all of the indoor cleaning to those who share the indoor cleaning responsibilities with their husband and child(ren). Nine of the participants utilize a cleaning service to clean their homes on a non-weekly basis.

Table 1: Participant Characteristics

Category	Description	Number of Participants
Ages of children	Child/Children under the age of 5	17
	Child/Children aged 5 or older	11
Residence	Urban	16
	Suburban	12
Professional Cleaning	Employ Professional Cleaners	9
	Do not employ professional cleaners	19
Highest Level of Education	Technical/Associate's Degree	2
	Bachelor's Degree	7
	Master's Degree	13
	Doctoral Degree	6

Participants were coded into five cleaning product profiles (CPP) according to their descriptions of the cleaning products that they currently use in their homes. The five profiles fall on a spectrum that is anchored by “conventional” and “eco” at either end. Participants characterized as having a conventional profile exclusively utilize conventional cleaning products defined as either petroleum-based mass marketed products widely available in supermarkets and discount stores; bleach, ammonia, or other highly caustic cleaning agents. At the other end of the spectrum are the eco profile participants who exclusively utilize eco-friendly cleaning products which include plant-based products that are marketed as earth-friendly and homemade products that include ingredients such as vinegar, baking soda, castile soap, and borax. The mixed group includes those who are actively transitioning to eco-friendly cleaning products and those

who are open to using both conventional and eco-friendly products. Table 2 lists the distribution of participants across the cleaning product profile spectrum. An in-depth description of each group and the rationales discussed by participants within each profile group is included in the findings section.

Table 2: Distribution of Cleaning Product Profiles

Cleaning Product Profile	Number of Participants
Conventional	5
Conventional - except for one or two eco	6
Mixed	5
Eco- except for one or two conventional	7
Eco- friendly	5

Findings:

Cleaning product profiles

The five categories on the spectrum of cleaning product profiles were organized based on the types of cleaning products that participants use in their homes. The next few paragraphs provide representative examples from each of the five categories. Participants in the conventional category exclusively utilize cleaning products that are not marketed as being eco-friendly. They prefer products from trusted brands such as Lysol and Clorox. Three of the participants in this category would not use products labeled as eco-

friendly because they do not think that those products would work as well as the products that they use in their homes.

Q: Would you consider a green version of 409 or Lysol?

A: If the same brand makes a product that's green....I might consider that because the same brand would not want to deteriorate their brand so they would want to make sure that it is as good, right, so maybe I would try it. But a completely different brand that is green - somebody would have had to have use it and tell me that it did clean very well or ...just give me a sample [so] I could try it, but I wouldn't buy it. (Olivia¹, conventional)

One of the participants in this category would need more evidence to support a shift to eco-friendly cleaning products though she has made changes from conventional cleaning products that she describes as being harsh to some that are less harsh. Another participant in this category is actively making changes to reduce chemical exposure and be more eco-friendly in other areas of her life. She views cleaning products as being less important than revamping food choices for her family and eliminating Bisphenol-a (BPA) from food and beverage containers. She did try an eco-friendly dish liquid but when that did not perform to the standard of her expectations, she was discouraged from trying other eco-friendly products.

Six of the participants fall into the conventional –except for one or two eco-friendly products category. Two of the mothers in this group have selected Clorox Greenworks spray for some of the cleaning tasks in their homes. Both said that they bought it because it was more natural and they felt that they could trust that it would work because it is manufactured by Clorox. For example, one of the mothers stated:

I definitely would rather use something that's natural that has the same effect as

¹ All participant names included in this paper are pseudonyms.

far as cleaning than something that has all those chemicals and fumes in it. So I'm actually glad they're coming out with a lot of, you know, eco-friendly products. (Nadine, conventional)

One participant purchases 7th Generation laundry detergent, a plant-based product that is marketed as being eco-friendly, because it was recommended by her infant's pediatrician as a way to reduce the skin irritation that her baby was experiencing with conventional laundry detergent. Another of the participants in this category had planned to switch to all eco-friendly cleaning products once she became a mom, but her husband did not think it was necessary. Her eco-product (window cleaner) is something that is left from her initial attempt to switch to eco-friendly products. A fifth participant noted that she does not think much about cleaning products because she doesn't use them that often, however, she is somewhat concerned about the chemicals in conventional cleaning products because she wants to avoid endocrine disruptors. She uses dishwasher detergent that is labeled as eco-friendly. The sixth mother in this category purchases her cleaning products mainly based on tradition – the majority of the products that she uses were used in either her home or a relative's home during her childhood. She has purchased a couple of products that are labeled as ecologically friendly mainly because she needed the product and was at a store where those were the only options available. She needs more evidence to support the necessity of changing all of her cleaning products but noted that if there is uncertainty and a chemical is easy to avoid, she will avoid it.

Some of the participants use a mix of ecological and conventional cleaners. Of the five participants in this category, one is actively working towards using more eco-friendly products and as her products run out and she researches alternatives, she is

gradually making a switch to eco-friendly products. Another chooses eco-friendly products that are used around her child but uses conventional products for her and her husband. For example, the cleaners that are used to clean the bathroom tub that her son uses have to be eco-friendly but the bathroom cleaners for her bathroom are conventional. She would like to purchase just one, but out of tradition and habit, she continues to utilize parallel sets of products. One uses a mix of conventional products that she grew up with and eco-friendly products that she has researched. A self-described “creature of habit”, she does not see the need to change the conventional products such as ‘Spic and Span’ that work well for her and are also used by her parents. However, for the cleaning products that she has researched and chosen, she has selected ones that are more natural because she likes products with simple ingredients that she can understand what they are. Two of the participants in this category would prefer to use more eco-friendly cleaning products but efficacy, cost, and convenience concerns have lead them to continue to use a mix of products.

The seven participants in the eco- except for one of two products category all place a high value on purchasing eco-friendly cleaning products. Two would be completely eco-friendly in their cleaning product selections if it were not for their husbands who prefer to use conventional cleaners when they clean. One of the two throws away or hides the conventional products that her husband purchases while the other has talked about replacing her husband’s conventional bathroom cleaner with a more eco-friendly option. The other five participants with this CPP mentioned that they use one or two conventional products for very specific tasks that eco-friendly products

have not performed well on. For example, one participant uses bleach to whiten her family's whites because the eco-friendly laundry detergent that she uses left the socks gray. Another participant noted that she uses a special granite cleaner formulated for granite every once in a while in order to "maintain the integrity of the stone". A third participant discussed purchasing a conventional bathroom cleaner after moving into a new apartment because she wanted her tub and shower to be shiny, clean, and free of the last inhabitant's dirt. Five of the seven participants in this category described using a mix of homemade and purchased products.

The five participants in the eco-product category have made a thorough switch from conventional to eco-friendly products. Three have made the switch within the past three years and two have had a gradual shift over the past decade. Three of the participants use a mix of homemade and store-bought cleaners. One purchases all of her cleaners from a single brand that she switched to after finding that the products work because she had been disappointed in some of the other eco-friendly products: finding that line encouraged her to switch all of her cleaning products. One expressed a preference for purchasing whatever eco brand is on sale.

For the purposes of the analysis, the five categories across the cleaning product profile (CPP) spectrum were collapsed into three: conventional, which consists of the participants who use only conventional product and the participants who use conventional and one or two eco-products; eco, which consists of the participants who exclusively utilize eco-friendly cleaning products as well as those who use one or two eco-products; and mixed. CPP categories were condensed to streamline the analysis. The

rationale for condensing the categories is that the participants at either end of the spectrum share similar values and orientations towards their cleaning products. So that the participants on the conventional side of the spectrum who use one or two ecological products might have an exploratory attitude to try an eco-friendly product or may use an eco-friendly product as recommended by a doctor for a particular reason but in contrast to the participants on the eco side of the cleaning product profile spectrum, they have no commitment to eco-friendly products.

Definitions and descriptions of cleanliness

While stated definitions of a clean home were similar across participants, the focal areas, methods for cleaning, and the extent to which a house should match the definition of clean varied. Participants defined a clean home as having an absence of debris, dirt, smudges and build-up on surfaces. To varying extents absence of clutter was also mentioned and distinguished as its own category of cleanliness. This suggests that participants are all guided by ideologies of clean that incorporate sensory referents of household cleanliness. In particular, visual cues are the most important for determining whether household surfaces are clean and are key indicators for the participants who engage in “as-needed” cleaning rather than those who clean at regularly scheduled intervals.

Scents associated with a clean home varied across participants and there were differences between conventional CPP and eco CPP participants. Eco and mixed CPP participants described a clean home as having no scent, or the absence of a chemical scent. Three eco participants noted that they had retrained themselves from an association

of cleanliness with the scent of chemical cleaning products to an association of cleanliness with an absence of scent or the presence of natural or essential oil based scents. In contrast, several conventional and mixed CPP participants, indicated that they associate clean with scented products and noted that they like either “lemony” or “fresh” scents. One conventional CPP participant noted that she does not like much of a scent.

Scents of a clean home are connected to the products that people use to clean their homes and the expectations have shifted for participants who have switched from utilizing conventional to eco products. As they have made changes in their cleaning products, eco and mixed CPP participants described changing expectations for the scents of cleanliness in the home. For example, one participant said:

Now as I’ve kind of gone done this two year path or so of going fragrance free or finding just truly essential oil fragrance things, when I smell things, if I, like at work, there’s a girl who walks by all the time and I know she uses Bounce and it’s so overwhelming to me now to smell that. So I think now I’ve kind of undone my years and years of conditioning thinking that laundry needs to smell like bleach and Snuggle. Now I know it just needs to be clean so it’s been an interesting change in my own mind particularly with laundry is it doesn’t smell the way it used to smell but I don’t feel that it’s not clean, So that’s all good.(Liz, eco)

By utilizing concepts such as “retraining” and undoing “conditioning”, participants highlight the important and deeply felt role that scent plays in structuring assessments of cleanliness in the home.

Evidence of cleanliness regarding clothing, towels, sheets, and other laundry is heavily based on visual and scent indicators. In similar responses to participants in Shove’s (2003) research, where participants noted that their laundry was clean because it came out of the washing machine, participants know that their laundry is clean because

after they either put it through the washing machine or hand-wash it, it shows no visual signs of debris and does not smell as if someone has just worn it. With the universal exception of undergarment and socks, which are washed after each wearing, scent and visual indicators often inform decisions about when to throw an item of clothing into the laundry for participants across the CPP spectrum. For all participants, towels and sheets are either cleaned because of scent or visual evidence that they are dirty or because they are washed at specific intervals (e.g., sheets may be washed once every week, every two weeks, or every three weeks and towels may be washed after using them for two to seven days).

Cleaning practices and norms

While frequency of cleaning and targeted areas for extra attention varied, the households all engage in the following cleaning routines: regularly washing dishes and pans after using them, clearing and wiping debris from kitchen counters on a daily basis, and washing laundry on at least a weekly basis. Kitchen surfaces tend to be washed more frequently than other areas of the home. Having children influenced the cleaning practices of some of the participants, with many noting that their frequency of doing laundry and cleaning the floors increased significantly once they had children.

Nine of the participants, representing conventional, mixed, and eco CPP, employ a household cleaner on a regular basis, with intervals ranging from once every two weeks to once a month. At five and three, respectively, the number of eco CPP participants who utilize a cleaning service was higher than the number of conventional CPP participants

who utilize a cleaning service. Of those not utilizing a cleaning service, three of the conventional CPP described performing thorough whole house cleaning on a regular basis: with one spreading the routine across a week, one every weekend, and one every three weeks. Two of those three participants really enjoy cleaning and value their own cleaning methods so much that they would not consider hiring a professional cleaning service because they feel that the service would not clean as well as they do.

Conventional CPP participants are more likely to have standard, very thorough, regular cleaning routines while participants in the eco CPP group are more likely to clean on an as-needed basis. Half of the participants described cleaning on an as-needed basis. For some, this includes regularly scheduled intervals for cleaning specific areas of the house such as cleaning the floors every week or deep cleaning the bathroom every month, while other areas are cleaned when the participant or her spouse uses visual or scent cues to determine that the areas are dirty. Definitions vary: as-needed may be a daily maintenance clean-up of areas of the home that have been soiled during the day.

Q: In terms of cleaning surfaces, how often do you usually do that?

A: Pretty regularly, I mean the thing is there's more mess now, every time I feed her at the kitchen table, there's a mess on the floor, there's a mess on the table, there's a mess putting the food together so. You just start to let it go. You might wipe it down before the next meal instead of after the meal. Yeah, I just, you kind of let it go more it might be sweeping little spots but the floor isn't clean all the time. Mopping probably doesn't happen as much as it should there's a lot more spot cleaning. (Ursula, eco)

As-needed may mean a deeper cleaning of an area that looks dirty and hasn't been cleaned for a while. For example, one participant said "I dust only when it gets to the point where I can't take it" (Calista, conventional). While determining whether something

needs to be cleaned varies, parents with babies mentioned that cleaning the floor more frequently is/was more important as their children begin/began to crawl.

Seven of the participants (2 conv. and 5 eco) who clean on an as-needed basis mentioned that they have higher standards of cleanliness and/or organization when hosting guests in their home than they do on a day-to-day basis for themselves. This is an example where external social norms regarding cleanliness influence shifts in household behaviors. For example, one mentioned an increase in the frequency of household cleaning since she and her husband hired a nanny for their young child:

We have recently become much more clean because I have a [young child] and when we hired someone to care for her in our home, I felt that our standard of cleanliness – what was acceptable to me - was not necessarily what I would expect to be acceptable to someone else who was going to work in my home. So we have become somewhat cleaner as a result of that. (Xenia, conventional)

Another participant described changes in her household cleaning routine in preparation for visits from guests:

We always have to clean before guests come over. I mean neither I nor my husband are very good at keeping things clean even though we both technically like to have things clean, but it doesn't stay that way.... If people are coming over for dinner or if they're staying over, then my husband and I both run around and try to make sure that the kitchen is presentable and that the bathroom is presentable and that it's not terribly cluttered.... I'd actually much prefer being messy and not caring. I used to have a good friend who lived in the area and her sister lived around here too and their house was a disaster - probably even worse than ours - but she didn't care so they had people over all the time and just had it messy but there's something... if people are coming over I need to clean. (Tameka, eco)

External norms influence perceptions of practices but may not dictate the practices themselves, particularly in cases where evidence of the level of cleanliness is only

available to household members. The frequency of washing bed-sheets is an example. Of the 24 participants who reported washing their bed sheets less frequently than once per week, nine made self-conscious comments. For example, when responding to a question about the frequency with which they wash sheets, participants said that following:

Um, I should wash my sheets more - that's how I answer that question. I have to go home and clean my houseYes not once a week at all. Not once a week at all. (Barbara, conventional)

Sheets not – that's sort of an embarrassing one – not very often... (Mari, eco)

That's where you can say I'm dirty because, honestly, I just let [the housecleaners] do them every two weeks (Galinda, conventional)

I know some people are like every two weeks, but we're more like once a month on our sheets unless we're sick or something. (Wendy, eco)

Bedding and towels, I don't know what the correct answer is on it, but I think in reality in our life, it's about every two weeks. I think bedding probably should be done more but it doesn't get done more than that. (Kim, eco)

The comments suggest that participants were engaging with notions of external norms. They think or others have suggested that they should wash their sheets more frequently than they do. While conscious of those norms, they do not follow them in their own household routines.

There are shared basic norms of cleanliness regarding raw meat. Of the 25 participants that prepare raw meat in the home, all reported taking steps to avoid potential cross contamination with utensils, cutting boards, and dishes that held raw meat. For example, after cutting raw meat, participants wash items in hot soapy water right away; put them in the dishwasher; or set them aside in the sink in order to prevent anyone from using them before they have been cleaned. The majority use plastic cutting boards, citing

reasons such as plastic can be sanitized in the dishwasher: Eleven of the participants (3 conv., 2 mixed, and 6 eco) noted that they put the cutting board used for meat in the dishwasher in order to sanitize it. A total of two participants specifically noted that while they have read that wooden cutting boards are actually safer to use than plastic cutting boards, they continue to use plastic. Two other participants only use wood.

Ten of the mothers wipe up spills from raw meat with a sponge or paper towel and some dish soap or soapy water (water used for cleaning dishes). Nine of the participants use disinfecting or sanitizing products to clean up after a spill from raw meat on the counter but the type of products differ by CPP. The five conventional CPP participants who use disinfecting products purchase commercially available products including Lysol and Clorox sprays and wipes while the four eco CPP participants use homemade sprays containing vinegar. Across the board special handling of raw meat shows that all of the participants are aware of potential harm from cross-contamination due to contact with raw meat, but they view the risk differently: nine of the participants feel a need to use anti-bacterial cleaners in the presence of potential exposure to harm from germs from meat while for 10 (3 conv.; 2 mixed; and 5 eco), just removing it with soapy water is enough.

In addition to the varied responses to the dealing with threats associated with raw meat There are varied perceptions of the threat of germs on household surfaces and the need to sanitize or disinfect surfaces. Seven of the participants, all conventional CPP, noted the importance of disinfecting surfaces and they purchase antibacterial or disinfecting products to do that. Of the seven, three talked about the importance of killing

germs while also noting that they did not want to be “too clean”, or “surgically sterile”. One mentioned that she had heard that antibacterial products could be bad, but thought that the chemicals in Lysol were okay. In contrast, 12 participants (3 conv.; 2 mixed; 7 eco) were against antibacterial products and of those, four specifically mentioned avoiding triclosan. Reasons for not using antibacterial products included not wanting to contribute to the rise of drug resistant bacteria and that the anti-bacterial products destroy good bacteria as well as bad bacteria. While against products formulated to be anti-bacterial, they, to varying degrees, use commercially available and homemade products that include vinegar, alcohol, or bleach to kill germs if the situation warrants it.

Product selection, health, and the environment

Product selection is based on a number of factors including, cost, efficacy, availability, tradition and childhood experiences, brand loyalty, and perception of eco-friendliness. All participants are aware of the existence of products marketed as environmentally friendly. It is not surprising that all 12 of the eco CPP participants included “green”; less toxic; not going to hurt child’s health, and natural as attributes that they place a priority on when selecting cleaning products for their homes. All five of the mixed CPP participants also mentioned environmentally friendly aspects as something that they think about but that limiting factors such as availability, cost, and efficacy prevent them from switching to all eco-friendly products.

Participants who utilize primarily or exclusively conventional products have varied reasons for eschewing eco-friendly products including perceptions that the products will not be as effective, that they are more expensive, and that there is not

enough evidence to demonstrate a need to switch to eco-friendly products. Along those lines, in the absence of acute evidence of harm, many conventional participants do not see potential negative health impacts of their cleaning products. For example,

... I would say that I don't see a need to switch from a health standpoint. No one gets a rash from using the Lysol or something so I don't see a need. (Bryn, conventional)

Of the six conventional CPP participants who use one or two eco-friendly products, two described a lack of information regarding the relative chemical impacts of different products as a reason that they do not use more eco-friendly products. For one, given the perception that eco-friendly products cost more than conventional cleaning products, the burden of proof is on her to convince her husband that switching to more eco-friendly cleaning products is necessary.

But it is interesting that he has a science background, in terms of research and trying to pay attention to these matters, but he also can err on one side of the spectrum which is you know "I need real proof or hard data", that you know, like, if, people say that children are going to get autism because they're getting certain vaccines, he'll say okay I'm going to look at the evidence. But he's you know not as concerned when it comes to cleaning products, I guess. And I would add because I think that it's important to add and it's not so much my point of view. But my husband has said before "we grew up with this and we're okay" or you know, just him not wanting to be part of ...the "worried well" or becoming neurotic....(Dani, conventional).

At least in theory, several would like to use more eco-friendly products but have not done that much work to find out which would actually be better and easy to use. Despite knowledge of potential risks to health with cleaning products, they have not made a switch because they have other more pressing priorities that require their energy

and it would take too much time to thoroughly investigate the costs and benefit of the alternatives.

Several conventional CPP participants purchase conventional laundry detergents that are scent or dye free, which participants described as being free of irritants, because someone in their family experiences skin irritation from conventional laundry detergents. Participants have also chosen this option in an attempt to prevent potential (not experienced) skin irritation on their children, Conventional CPP participants also described protecting their children from potential negative health impacts of cleaning chemicals by either using only soap and water for the areas and surfaces that their children are directly exposed to or by switching to less harsh conventional cleaning products. For example, one participant described switching to 409 all-purpose cleaner from Clorox:

I try now that I have the daughter and the smells are stronger and she likes to be around me like I've used the Clorox household cleaner, but it's really strong so I stopped using that because she doesn't give it time to really air out before she goes in. So that's why I moved away from that. And then the 409 seems to work okay now mind you I haven't done any research on how bad it is for her exposure, but it doesn't have that strong smell so I like that and I also feel like it is disinfecting. (Barbara, conventional)

Overall, the conventional CPP participants are more tied to habit than eco CPP when it comes to selecting cleaning products and there is either no concern about the health and environmental impacts of the products or there is a slight concern, but switching eco-friendly products would take a lot of effort and research. As described by one participant:

In the dishwasher we use Cascade powder which I think we use because my mother used or my grandmother or someone in my family used that rather than

because I think that it has a particularly good profile of working well or being not harmful to the environment. In fact I think it probably is harmful to the environment and it's interesting because I said I'm a vegetarian and I don't buy cosmetics and things like that that are tested on animals. But I notice that when it comes to household products like laundry detergent or dishwashing detergent, I mostly have just used whatever my family used and I don't have the same standards of - like I don't research- I'm sure that many of the manufacturers of those products actually do have testing policies that I wouldn't agree with and if I were sort of making the from-scratch decision at this point I probably wouldn't purchase them, but sort of the habit well this is what was in my house as a child has been stronger than that which I think is interesting. (Xenia, conventional).

Another reason often mentioned is that participants like the products that they are using and see no need to switch.

In some respects you think the earthy-crunchy stuff doesn't work as much because it doesn't have the chemicals that make everything sparkle, I suppose. But I guess I just haven't looked. You know I find a product that I like and I stick with it until something happens and then I go looking for something else. But I've had really good luck with everything that I've used so I really don't have a need to look elsewhere. (Zoe, conventional)

The same participant also mentioned that her husband has complained about fabric softener irritating his skin, but she doubts his claims since she sometimes uses fabric softener on his clothes and he has not complained at those times. While assessments of relative health risks were a reason for not selecting eco-friendly products, there was at least an environment risk assessment taken into account. Two conventional CPP participants noted that even though household cleaning products may have a negative impact on the environment, since the participants do not use a high volume of products, they do not make as much of an impact on the environment as others do and therefore do not have as much of a reason to switch.

Many of the conventional CPP participants talked about reducing their families' exposure to potentially harmful chemicals in conventionally-grown produce, food and beverage containers, personal care products and/or conventional lawn care. Three conventional participants specifically talked about avoiding BPA, a suspected endocrine-disrupting chemical found in food and beverage containers, among other things. In contrast to some of the chemicals in cleaning products, these participants avoid BPA in food and beverage containers because they view the potential harmful effects as being better documented and it is easier to identify BPA than unnamed chemicals in cleaning products. For one, recent interactions with a nutritionist, who is also a holistic health professional, have increased her awareness of potential threats in household products and consumer materials. Worried about the risks from food and beverage contact with BPA and other chemicals contained in plastic, she has switched to glass food storage containers and eliminated BPA water bottles from her home. She also now recycles plastic food containers such as yogurt tubs rather than reusing them to store food. She talked about sorting through and prioritizing action on cleaning product while incorporating other considerations:

I think that [chemicals are] in everything that we use, and I mean we often make, at the table, we make fun of each other because what are we going to use because everything has chemicals. I think that we're aware of them, we just haven't found a way of stopping or of finding an alternative, I guess suitable alternatives, because perhaps there are alternatives but 1) we haven't found them and 2) like the dish liquid it just didn't do the job as we expected.... Everything else is really up to me, like everything that comes into my home, I purchase it. So, yeah, I have to, you know, I try to do my research, but it is overwhelming out there. (Ellen, conventional)

For that conventional CPP participant, there is a desire to make a shift to eco-friendly cleaning products, but the priority is to get rid of BPA first.

Health concerns dominate the list of reasons that eco CPP participants select eco-friendly products: only one did not mention impacts on human health as a reason for the switch or continued use of such products. For eight eco CPP participants, health reasons spurred their decision to convert to eco-friendly household cleaning products. Three mentioned that their own negative side effects including headaches, itchy skin, and irritated noses prompted them to think more about their cleaning chemicals and to seek out more natural alternatives. For example:

I think early on when I was cleaning, when we were first married, the stuff bothered me and there's just so much out there about alternative products and also just so much research about how bad these things can be for you, the bleach and other chemicals. (Quinn, eco)

I have really sensitive skin and I find a lot of commercial stuff just makes me itchy and it smells awful. (Valerie, eco)

Another three could point to a particular experience in which they learned about health hazards associated with conventional cleaning products. For each of those three, learning about the health hazards, which were framed as including cancer risks and endocrine-disrupting impacts, was particularly salient because each has at least one loved one who has battled cancer. One participant described the feeling after learning about harmful chemicals in conventional cleaning products during a community presentation on toxics in everyday products:

The whole lifetime you just use a product that you spray out of a bottle and honestly, I'd never stopped to read the label. The assumption is always 'well if it's a cleaner, then I'm cleaning'. It never dawned on me to stop and read labels. So in this speech she handed out handouts but also talked about different ingredients that were in a lot of these things like VOCs. I had heard that before but I didn't know exactly what it meant and aerosols – we're putting these fluorocarbons into the.... just there was so much that I took in that night and I went home and I was just overwhelmed. All of a sudden, something that I'd just taken for granted all my life, - i.e. a cleaning product is a cleaner - all of a sudden that isn't the case. It was very eye-opening, but overwhelming. It was so overwhelming because it was so eye-opening. (Liz, eco)

For the other two eco CPP participants citing health reasons for the switch, one has had concerns about the health impacts of cleaning products for more than a decade while the other has had such concerns since becoming a mother. All of the participants who cited health reasons as the main reason for the switch also said that their healthier cleaning product choices are also better for the environment.

Four of the eco CPP participants, who are the participants who have been using eco-cleaning products longest, started using eco-friendly cleaning products out of a concern for the environment and were supported in their transition through examples set by friends and people close to them who were already using eco-friendly products. One continues to make her choices based primarily out of a concern for the environment.

A: Yeah, I want us to be living as sustainable lifestyle as possible in every way. I don't want to create things that are bad for the environment or for our bodies, but for me it's foremost good for the environment

Q: So is your health part of the calculation?

A: For food, yes, but for cleaning, no. And even for food for me it's sustainability that's the bigger issue than health because we eat so healthfully anyway. It's kind of splitting hairs to try to be more healthy I guess

Q: But you can be more sustainable?

A: Yeah (Amy, eco)

While the three others began using eco-friendly cleaning products out of a concern for the environment, over time they have added health concerns to their reasons. For two, the real consideration of health impacts started when they became mothers.

Communicating with friends and acquaintances has helped to support the eco CPP participants as they identify and select products to use. Every one of the eco CPP participants has support in the shift either within their family, close network of friends, and/or in their extended social networks. Making the switch to eco-friendly products is culturally reinforced within their peer groups. The women share a precautionary approach to thinking about the health or environmental risks in their products:

I think a lot of the chemicals that are in cleaning products are responsible for allergies that kids have. Definitely allergies. I don't know, you know- has it been proven that these cause cancers and learning disabilities maybe not directly proven but definitely proven with allergies, asthma that sort of thing. But someday when they do prove that link, I'm not going to have any lost sleep because I'll have already made all those changes. (Mari, eco)

In contrast to conventional CPP participants that cite cost and convenience factors as reasons for not purchasing eco-friendly cleaning products, several of the eco participants noted that switching to more eco-friendly options has not increased their cleaning budget and in some cases has decreased it. Some also say that it is more convenient to use eco-friendly products. Increased convenience and cost reductions were achieved by purchasing concentrated versions of products and by making products at home with relatively inexpensive ingredients including white vinegar and baking soda. Mixing their own products at home also saves trips to the store. Some also purchase items online that are difficult to find or unavailable at local stores.

Since the eco CPP participants have made purchasing eco-friendly or more natural products a priority, they incorporate that value into the patchwork of desirable traits that their products have. Their subsequent views on convenience and efficacy are also influenced by that value. For example, if something takes more time or elbow grease to work, it is worth the trade-off to be able to eliminate the use of chemicals that are deemed as harmful and are perceived to have other negative impacts.

A: There's a few drawbacks because I think there's a few stains in our clothes but I don't use some of the stain remover type of products that my mom would definitely use and she tries to get me to use. I just try to avoid using them. But I usually find that if you keep washing something, it will eventually come out.... So I'm sure we have some more stains on our clothing than we used to or that we could have and there's some things like the ceiling in our- We probably have to put more elbow grease into cleaning the shower, cleaning the ceiling with the mildew. I think we probably could, back in the day, get something like Clorox or Tilex or something and that would probably be faster or less elbow grease.

Q: But you're okay with that trade-off?

A: Yeah. (Wendy, eco)

Eco CPP participants demonstrate persistence in the face of failed eco-product tries. While a few conventional CPP participants who have tried eco-friendly cleaning products stopped looking to purchase such products after one product failed to meet their expectations, eco CPP participants continue to seek out eco-products after experiencing a product failure. For example, one participant had a difficult time finding a dishwasher detergent that met her standards.

A: For the powdered dish detergent ... everything was..... cloudy, anything glass was cloudy,- film – that would be the word – had a film over everything and for hand dishwashing, when we did a do-it-yourself type ...then everything still had almost like a grease film.... So kind of not meeting the standards.

Q: But you're still pressing on? You haven't said okay, these don't meet the standards so I'm going to go back to Dawn or Palmolive?

A: I wouldn't. I, and my husband knows this, I would rather have cloudy dishes than to send something back out, you know, it's going to go into the septic tank and go out there..... the stuff that's not good for the environment in the major brands out there. It comes right back around. (Kim, eco)

Not all eco CPP participants have been successful in finding cleaning products that meet their needs for every product category. The participants who use all eco-friendly products except for one or two conventional products have made exceptions to their goal of using all eco-friendly products for certain cases where they were not able to find a product that met their standards of cleanliness for a given task. For example:

Although there is one product that we haven't changed cause we've tried and nothing works better than the commercial.... The dishwashing detergent for your hand wash dishes. All that green stuff is no good, it doesn't work. So we're still buying bad for the environment hand-washing dish stuff. (Amy, eco)

It is usually after repeated failed attempts that such participants go back to using a conventional product for the task.

Discussion:

This study introduces the concept of "cleaning product profile", which reflects participants' preferences for conventional cleaning chemicals or environmentally friendly ones. The findings suggest that whether a participant utilizes primarily conventional cleaning products or eco-friendly cleaning products, changes in the selection of cleaning products are made within a framework of currently defined cleaning routines and general standards of cleanliness. For the mothers in this study, shifting to environmentally

sustainable practices generally means substituting eco-friendly products for conventional products in existing cleaning routines. While Littler (2009) argues that there has never been a time when problems of consumption have been more conspicuous, findings demonstrate that the potential impacts of cleaning products on human and environmental health were not well known among all participants. Participants had varying degrees of awareness of the consequences of their household cleaning consumption decisions. Due to the politics of knowledge in a risk-based society (Beck, 1992), competing demands on time (Shove, 2003), and variations in orientations toward chemical risks, several participants expressed difficulty in navigating the contested risks and balancing relatively undefined hazards with expectations for cleanliness while several others have navigated a path toward environmentally friendly products.

As Giddens argued (1991), in a reflexive modern society, people make decisions to construct and maintain their lifestyles on a day-to-day basis. Cleaning practices and products are aspects of lifestyle choice. All of the participants in this study think about the impacts of their consumption on the broader environment to some extent and as a result engage in behaviors that are directed towards reducing resource use and waste. Participants across the CPP spectrum noted that they recycle, many use energy efficient washing machines and clothes dryers, and several compost food scraps. All of the participants engage in recycling and feel to some degree that their everyday actions have an impact on improving environmental sustainability. The difference between the two groups is that in addition to trying to reduce waste and energy use, eco CPP participants

also try to reduce chemical burdens on their families and the broader environment by using eco-friendly cleaning products.

All participants were aware of the existence of products marketed as having a reduced impact on human and/or environmental health. However, lacking clear evidence of harm to human health from conventional cleaning products or of the benefits of products labeled as environmentally friendly, the conventional CPP participants did not have a strong impetus to change their products. For example:

Environmentally I can understand I feel like I do lots of other things - like we use cloth napkins and that sort of thing. So in little steps we do environmental stuff that I've never thought of cleaning products being important. And then, again, I think it comes down to the whole, like, baby in a bubble thing I don't feel that it's really going to make that much [difference]. (Galinda, conventional)

As has been found in prior research, even those consumers who have an awareness of the environmental impacts of their consumption decisions feel pressure to make the right decision in a climate of uncertainty of information and competing claims (Connolly & Prothero, 2008). The “paradox of green consumption” is that loose standards for labeling “green” products means that claims of the environmental benefits of a product may not be credible (Littler, 2009). Given a multitude of risks that parents have to negotiate as they raise their children, cleaning products are not high enough in order of priority for conventional CPP participants to justify a change. In the absence of clear evidence of acute toxicity, there is contested science regarding the extent to which a given chemical or group of chemicals causes harm. At this stage in the politics of knowledge surrounding health risks associated with cleaning products, it appears that many of the threats still

remain invisible and as such are currently open to social definition and construction (Beck, 1992).

Given the lack of a broad consensus as to the risks associated with chemicals in cleaning products, as well as uncertainty about whether products marketed as environmentally friendly are actually better, parents are left to shift through competing claims. While eco CPP participants started using eco products out of a concern that such products were either better for the health of the environment or human health than conventional products, many have not engaged in a thorough assessment of the risks associated with either. Not many could talk about the specific chemicals to avoid in cleaning products aside from phosphates, chlorine bleaches, ammonia or petroleum products, though most of them had done some research in the process of selecting eco-friendly cleaning products. Some used sensory experiences of displeasure or discomfort to assess that there might be something wrong with the conventional products that they had been using. This is in contrast to conventional CPP participants who would just switch out one product if there were a problem and who would require more stringent evidence of risk in order to justify a broader switch to eco-friendly products.

All of the mothers have made at least one non-cleaning related change in order to reduce chemical threats to their children. In a later modern society where knowledge is abundant and mediated, trust is an important component in helping people to make, and feel confident in, their decisions (Giddens, 1991). Trust may be an especially important factor in helping consumers navigate ideas about harm that conflict with established dominant ideologies of cleanliness or their own established practices. In terms of

selecting household cleaning products, a major difference between the eco and conventional CPP groups is in who they trust to provide them with guidance on which products to select: The conventional CPP are more likely to trust established brands, officials in authority positions such as doctors, and their own childhood experience with cleaning products while the eco CPP participants trust others who are concerned about the environment including experts; newer companies that are marketing environmentally friendly products; and their own gut, often guided by their nose, that says they should be using less harmful products. Differences in trusted sources are related to participants' attitudes towards risk. Eco CPP participants, who take a more precautionary approach to risks in cleaning products are more likely to trust sources that share their orientation. Conventional CPP participants, who have a more skeptical view of the risks associated with conventional household cleaning products, are more likely to prioritize their actions based on the advice of sources that present officially validated evidence of harm as in the example of BPA (New York Times, 2008).

For all of the mothers, convenience considerations play a prominent role as they structure their cleaning routines and select cleaning products. As described by Shove (2003), the pursuit of convenience is important when people try to maintain standards within a “fragmented temporal environment (p.170)”. All of the mothers described being busy and balancing multiple priorities. In terms of convenience and norms, the conventional CPP participants feel that their cleaning products work and that as a result, there is no need for them to change their existing routines. Environmentally friendly products are perceived as being less convenient because they are not always available in

the stores in which the participants regularly shop. Another concern related to norms is that the products will not be effective substitutes in their cleaning routines. A powerful perception preventing some from even considering a shift is that the products will not be as effective or it will take more work to make them as effective. For those who have encountered an eco product that did not work as well as a conventional product, they would rather go back to their old conventional product than try to find another eco product that would work as well.

There is support for the notion that certain ecological cleaning products are less convenient than conventional products on a few dimensions. For example, participants noted that in order to achieve the desired results in terms of cleanliness, it may take more “elbow grease”, or time to let a product sit rather than is the case for conventional cleaning products. However, for eco CPP participants, since the value to use less toxic products outweighed the value to have a product that can for example, ‘eat away soap scum’, eco CPP participants accept the conventional convenience tradeoffs and noted alternative ways, such as being able to make products from common household ingredients, that eco-friendly cleaning products are actually more convenient than conventional products. In many cases, eco CPP participants noted that the eco-friendly cleaning products clean equally well or better and have the added bonus of not leaving behind a toxic smell after the house has been cleaned.

As eco CPP participants described, there are sometimes noticeable differences in product performance between conventional and eco products for given tasks. This has had a mixed impact on norms. In several cases, participants have shifted norms regarding

how well a product should clean and have overcome expectations for products to make things as sparkly or as white as conventional cleaners used to make them. For eco CPP participants who use one or two conventional products, if after multiple attempts, they are not able to find ecological products that meet their established expectations for cleanliness they give up and go back to using one or two conventional products for specific tasks such as dishwashing. The only other time that eco CPP stray from the eco orientation is in using a product for a particular task like cleaning a granite countertop.

The study contributes to understandings of how everyday norms and behaviors shift towards ecological sustainability. This paper is an analysis of how individuals understand and frame their consumption decisions with regard to environmental health and sustainability. With awareness of the critiques that individual action alone will not solve all of our environmental problems (Biro & Johnston, 2007; Maniates, 2002), it does highlight some possible entry points to raise consciousness among consumers. As argued by Dauvergne (2008), it is important to help people understand the negative impacts, or “shadows” associated with everyday consumption, in order to sustain a collective will to push for broader policy and regulatory reforms.

The current analysis provides insight into some potential entry points under the conceptual frames of risk, trust, and convenience. Participants described household cleanliness in sensory-based visual and scent terms however, many of the potential risks associated with cleaning chemicals are not discernable through regular everyday sensory experience and may arise based on cumulative exposures over time. Future research focusing on cleanliness norms could help to explore this disconnect between visible

norms and invisible risks in a way that engages Beck's (1992) comparison of class based society where material conditions are obvious and risk society where risks remain potential and contested.

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